

Prevention

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bulletin

Statewide Strategy Well Under Way For Bioterrorism Preparedness

By David Engelthaler and Powell Gammill

The anniversary of September 11th is already here, and the Arizona Department of Health Services is moving rapidly forward with the development of its statewide strategy for bioterrorism preparedness.

Public Health Preparedness

The Centers for Disease Control and Prevention has provided funding to all states, including Arizona, to further public health preparedness and to build a solid public health infrastructure. The Department is focusing on the following areas of public health preparedness: emergency response planning; enhanced disease surveillance; increased laboratory capabilities; secure web-based health alert network; risk communication; and bioterrorism education and training for healthcare providers. Recently all county health departments were awarded grants to develop and meet these capacities as well.

Of particular note, the Department has recently developed the SIREN (Secure Integrated Response Electronic Notification) system. This system is designed to share health alerts and other sensitive information over a high-speed, highly secure, web-based environment. Over 100 users in the state, including

public health officials, first responders, and federal partners, are currently testing the system. The SIREN system has received national attention and has become a model for other states to follow.

Federal grants were also recently awarded to all states to coordinate hospital bioterrorism preparedness. The Department has already coordinated several state-wide and regional meetings to address the planning and assessment needs of the hospitals in the state. These assessments will be used to prioritize the hospitals' preparedness needs.

Laboratory Readiness

Staffing has been increased at the State Public Health Laboratory to respond to the increasing need for public health preparedness. The increased personnel will soon enable the State Laboratory to provide seven days per week capability for responding to suspect bioterrorism incidents and other potential epidemics. Clinical laboratories and other partners in the state will be notified of when this expanded coverage will start.

Real-time Polymerase Chain Reaction (PCR) capacities and other rapid molecular and antigen detec-



tion methods will be expanded to cover the increasing need for swift presumptive testing. The State Laboratory is boosting its testing capacity, upgrading testing methodologies and expanding environmental sampling to include improved food-borne illness surveillance.

Throughout the state, bioterrorism laboratory personnel have conducted training in more than 30 private clinical laboratories to recognize and safely rule out certain priority biological agents. On-site and off-site training will continue for all clinical laboratories in the state.

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Arizona
Department of
Health Services



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Influenza Season is Rapidly Approaching

By Anne Lutz

If the 2002-2003 Arizona influenza season follows the same pattern as last year, the first influenza case will be detected in November and the number of cases will peak by early February and begin to decline by mid-March. Projected influenza vaccine production for this year is between 92 and 97 million doses.

The Advisory Committee on Immunization Practices (ACIP) has published their recommendations for the 2002-03 flu season which includes the optimal timing for high-risk groups and for those who are not at risk of complications from the flu. The special needs of young children for the flu vaccine have also been addressed. These guidelines can be found at the CDC influenza website <http://www.cdc.gov/nip/flu>.

It is recommended that vaccinations begin for the following groups in October:

High Risk of Severe Illness

- 65 years old or older
- Children 6 - 23 months old
- Adults and children with a chronic health condition
- More than 3 months pregnant during the flu season

Can Give Flu to Those at High Risk

- Household contact or care-giver of someone at high risk
- Health care workers
- Household contact or care-giver of a child under 2 years old

A Child's Very First Flu Shot

- Children 6 months to 8 years old who are getting the first flu shot need a booster shot one month after the first dose of vaccine.

All other persons should be vaccinated beginning in November. Vaccination should continue through December and beyond. Influenza vaccine for the 2002-03 influenza season is still available for purchase. Health care providers who have not ordered influenza vaccine should do so as soon as possible to ensure timely receipt of vaccine. In general, providers who ordered vaccine directly from the manufacturers received the vaccine earlier. Vaccine prices have risen again from about \$5 per dose last year to \$6.50 per dose this season.

Anne Lutz is the Adult Immunization Coordinator for the Arizona Immunization Program. She can be reached at 602.230.5837 or alutz@hs.state.az.us.

**Don't let
the flu catch**

YOU!



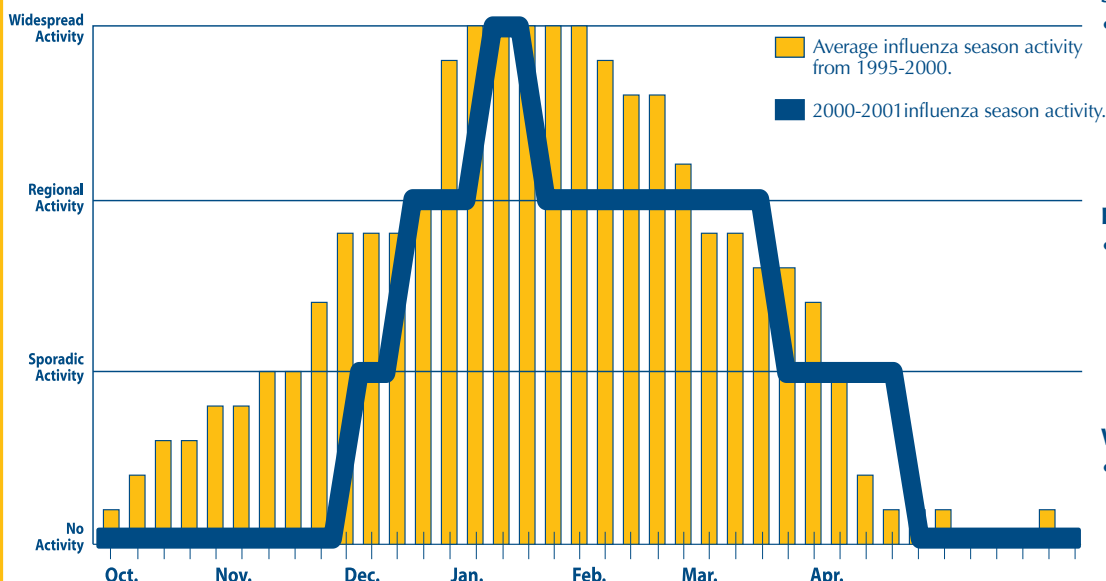
FLU HOTLINES

Following is a listing of flu vaccine clinic hotlines that will begin in October.

- Community Information and Referral Flu Hotline
Metro Phoenix: 602-263-8856
Outlying Areas: 800-352-3792
www.cir.org
- Southern Arizona Information and Referral
520-881-1794
www.azinfo.org
- Basha's Healthstyles
480-895-5350
- The Mollen Clinic
602-277-3588. www.mollen.com
- Healthwaves, Inc.
480-968-1886.
www.healthwaves.com
- Maxim Health Care
1-888-436-3339
www.maximflu.com

Influenza in Arizona 1995-2001

Figure 1



Definitions

Sporadic Activity

- Influenza cases, either laboratory-confirmed or influenza-like illness (ILI), are reported; however, reports of outbreaks in places such as schools, nursing homes, and other institutional settings have not been received.

Regional Activity

- Outbreaks of either laboratory-confirmed or ILI are occurring in geographic areas containing less than 50% of the state's population.

A geographic area could be a city, county, or district.

Widespread Activity

- Outbreaks of either laboratory-confirmed or ILI are occurring in geographic areas representing more than 50% of the state's population.

Even Bacteria Leave a “Fingerprint”

Victor Waddell, Ph.D., and Graham Briggs

Foodborne illness and death resulting from microorganisms are a common and preventable public health problem. It has been estimated that over 80 million cases of foodborne and water borne illnesses occur in the United States each year resulting in as estimated 9,000 deaths. Over 1,800 cases of salmonellosis, shigellosis, and campylobacteriosis occurred in Arizona in 2001. The more recently recognized pathogen, *E. coli* O157:H7, accounted for 30 cases of illness in 2001.

To stop the potential spread of a foodborne outbreak, it is imperative that the source of the microorganism is quickly found. The State Laboratory now has the ability to genetically “fingerprint” organisms using a procedure known as Pulsed Field Gel Electrophoresis (PFGE). Most species of bacteria can be categorized into several sub-types by PFGE depending on the amount of genetic variation in that particular species and the restriction enzyme used.

The State Laboratory can perform PFGE with just a couple of isolated colonies grown on a nutrient agar plate. By using a rare cutting restriction enzyme, the lab can cut the entire bacterial chromosome into twenty to thirty pieces. These pieces of DNA, or bands, can then be separated by their molecular weight using agarose gel electrophoresis. The difference in size of bands and number of restriction sites allows the lab to differentiate between closely related and identical bacterial sub-types from more genetically divergent isolates. An identical sub-type isolated from both food and persons who had consumed the contaminated food can be a valuable piece of evidence for epidemiologists as they investigate an outbreak.

PFGE can also be a valuable analytical tool to evaluate an increase in hospital clinical infections being caused by the same

To stop the potential spread of a foodborne outbreak, it is imperative that the source of the microorganism is quickly found.

bacterial species. The lab can help determine if the cases are related by looking for a common bacterial fingerprint among the patient isolates. This information can then be used to connect patients to a common bacterial source.

Because foodborne outbreaks associated with a common source often occur in multiple states, the Centers for Disease Control and Prevention (CDC) has created a laboratory network called PulseNet. All 50 states and the CDC participate in this program.

PulseNet allows standardization and coordination of laboratory results on a multistate level when common source outbreaks occur. Images of PFGE gels can be analyzed and forwarded to CDC through e-mail for comparison in a national database. Standardization of results among different laboratories is accomplished through the use of sub-types of organ-

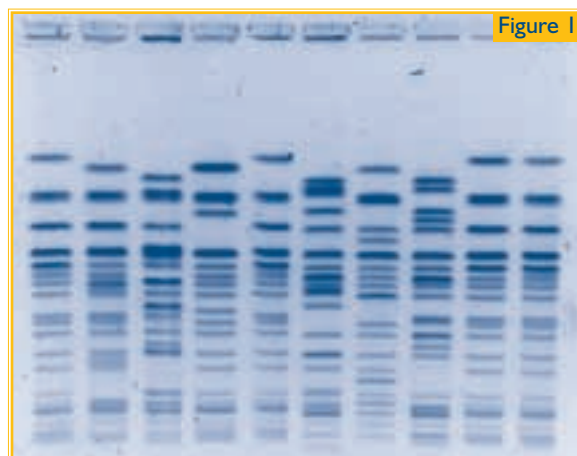
isms supplied by CDC with known fingerprints as standards. By running a known standard organism on every PFGE gel, a computerized software program can standardize each gel and allow comparison of fingerprints from PFGE gels from different states.

PulseNet's electronic database enables microbiologists throughout the U.S. to compare bacterial fingerprint patterns with those from other states and to determine if there may be a common outbreak pattern. This summer, over 19 million pounds of ground beef was recalled from numerous states due to *E. coli* O157:H7 contamination. The State Lab is comparing all samples of *E. coli* that are received for association with any of the *E. coli* responsible for the beef recall. In addition, the State Laboratory routinely compares the banding patterns of *Salmonella* and other organisms that are isolated to statewide and national outbreaks.

The CDC publishes standardized protocols for all participating laboratories. Currently, the Arizona State Laboratory has standardized protocols for *E. coli*, *Salmonella*, *Listeria monocytogenes*, *Shigella*, *Clostridium perfringens*, *Campylobacter*, and *Vibrio*. However, the State Laboratory can also fingerprint *Enterococcus*, *Enterobacter*, *Staphylococcus*, *Streptococcus*, *Pseudomonas*, *Legionella* and others upon request by state epidemiologists.

Bacterial “fingerprints” don’t provide the finality of a human fingerprint. While each human has a unique fingerprint, clones of bacteria all have identical “fingerprints”. Although each bacteria may not leave an actual unique fingerprint, they do leave a trail for epidemiologists to follow.

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Shows the genetic variation in *E. coli* O157:H7 sub-types after performing PFGE.

Adverse Health Effects Associated With The Rodeo-Chediski Fire

By Will Humble



A public health survey of more than 400 residents affected by the Rodeo-Chediski fire found widespread stress and health problems among both evacuees and those who did not evacuate. The Arizona Department of Health Services, the federal Centers for Disease Control and Prevention, and the Navajo County Health Department conducted the survey in southern Navajo County between July 5 and July 9.

More than 40 percent of those interviewed reported “a lot” or a “significant” amount of stress, and more than 40 percent felt that smoke from the fires had harmed their health.

Preliminary findings showed that:

- One-third of all respondents reported experiencing at least one health symptom including cough, shortness of breath, sore throat, chest pain, eye irritation or increased allergies from the smoke.

- Stress levels were generally higher in people that were evacuated.
- Working people reported losing approximately four days of work because of the fire.
- Sixty-six percent of asthmatics reported that their symptoms were worse after the fire.
- Asthma symptoms were generally worse in people that did not evacuate or were in non-evacuated areas.

The findings that smoke from the fire caused respiratory problems are consistent with other epidemiologic studies that have found exposure to particulate matter less than 10 microns in size causes shortness of breath, increases in coughs, aggravation of asthma, decreases in lung function and lung defense mechanisms, chronic obstructive pulmonary disease, and

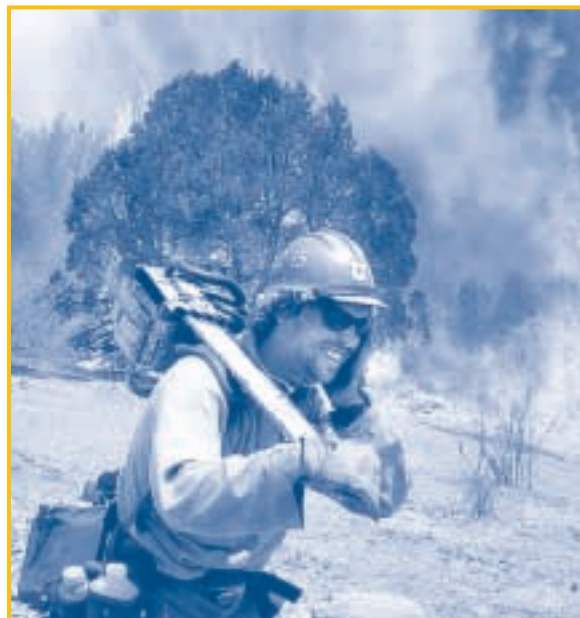


Photo courtesy of the East Valley Tribune

increased rates of hospitalization for respiratory and cardiovascular illnesses. The concentrations of particulate matter measured by portable monitors established that the levels were certainly high enough to cause adverse health effects.

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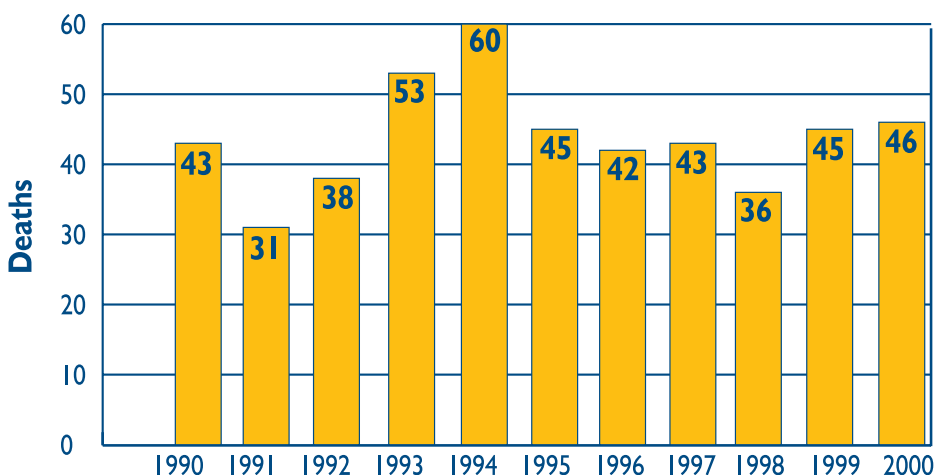
Most Deaths from Fire are Preventable

During the past decade an average of 44 Arizona residents each year died due to fire, flames, or smoke. Most of these deaths occurred in a residential setting. Smoke alarms, if functional, are highly effective in preventing deaths from residential fires. However, Arizona survey data found that only 24.6% of adults with a residential smoke detector said they had checked it within the past month (Behavioral Risk Factor Survey, 1998). Health care providers should encourage patients to install a smoke detector in each sleep area, and to test the alarm monthly. The National Fire Protection Association (www.NFPA.org) urges that batteries in battery-powered alarms be replaced yearly, and that alarms should be replaced every 10 years.

Figure 1

Accidental (unintentional injury) deaths from fire and flame among Arizona residents.

Source: ADHS Vital and Health Statistics Report, 2000.



Noteworthy...

“Dr. Bob” to Re-join ADHS as State Epidemiologist

A former member of the public health team at the Arizona Department of Health Services will be re-joining the staff this fall, assuming his previous position as Arizona's State Epidemiologist.

Bob England, M.D., M.P.H., better known among colleagues as “Dr. Bob” was formerly employed in the position from 1996 to 1999, where he was involved in a variety of public health achievements.

“We are very lucky to have Dr. England back at the Department,” said Catherine Eden, Director. “His depth of education and professional experience will greatly assist our efforts in dealing with the emerging challenges facing public health, such as bioterrorism and emerging infectious diseases.”

As State Epidemiologist, Dr. England's responsibilities will include coordinating disease control and surveillance activities in the state, working closely with county health offices, and assisting the Director in representing departmental and public health concerns to the media, legislature, other agencies and policy makers. He will join the Department in October.

Dr. England left Arizona in April 1999 for his current position as Director of the Health Department in Milford, Conn. His accomplishments in Milford include the design and management of a surveillance-based hepatitis C intervention program for several local health departments, implementing a community-based health education program with youth peer educators, and community-wide oral health planning.

Dr. England received his M.D. from the University of Arizona College of Medicine and a Master's in Public Health at the UCLA School of Public Health. He holds physician licenses in Arizona and Connecticut, and is Board Certified in Public Health and General Preventive Medicine.

Prior to serving as the Department's State Epidemiologist, he served as Medical Director for Preventive Medical Health Services at the Maricopa County Department of Public Health Services, Medical Director for Clinica Adelante in Surprise, Arizona, and Division Director for the Disease Control Division of the Pima County Health Department.

Breast Cancer Study Update

A study called SHINE (Southwest Hormone, Insulin, Nutrition and Exercise) began in January to determine if there are associations between metabolic, genetic, and environmental factors that may affect the risk of developing breast cancer. Using information supplied by the Arizona Cancer Registry, the University of Arizona Cancer Center will survey approximately 1,200 randomly chosen Native American, Hispanic, and White women diagnosed with breast cancer between 2000 and 2003. This study is being conducted in Arizona, New Mexico, Utah, and Colorado. (See July/August 2001 issue of *Prevention Bulletin*.)



As of August 1, 2002, approximately 400 physicians have given permission for their patients to be contacted for participation in this study. Over 200 physicians have given blanket permission to contact all of their patients. Study staff have contacted 156 patients and completed 99 surveys. The response by Arizona's physi-

cians is greatly appreciated. Physicians are encouraged to inform their breast cancer patients that they may be contacted to participate in this important study. To reach the Arizona Cancer Registry field office, please call Daniel Garcia at 480.947.3972. The University of Arizona study coordinator, Tara Patton, can be reached at 520.318.7281.

Arizona Case of Hantavirus Reported

The Arizona Department of Health Services confirmed in June the first case of Hantavirus Pulmonary Syndrome (HPS) this year in Arizona in a Maricopa County resident.

Since 1993, when hantavirus was first identified in the southwest a total of 35 cases of HPS have been reported in Arizona. One case was reported in Arizona last year.

HPS is an often deadly disease that usually begins with flu-like symptoms, and may rapidly progress to respiratory failure when the lungs fill with fluid. Patients usually develop breathing difficulty approximately two to six days after onset of symptoms. Hantavirus is spread by the deer mouse and other closely-related species of wild mice, which excrete the virus in their urine, droppings and saliva. People can become infected by inhaling particles of the virus that may become airborne when rodent droppings or nests are disturbed. The virus is not spread from person to person.

Nationwide, more than 325 cases of HPS have been reported in 31 states since the virus was first recognized. Of these, approximately 35 percent were fatal. The disease was first recognized during a 1993 outbreak that occurred in the Four Corners area, affecting 53 people in Arizona, Utah, New Mexico and Colorado.

Hantavirus can occur wherever the deer mouse and its close relatives are present, which includes most rural areas throughout the state. Other

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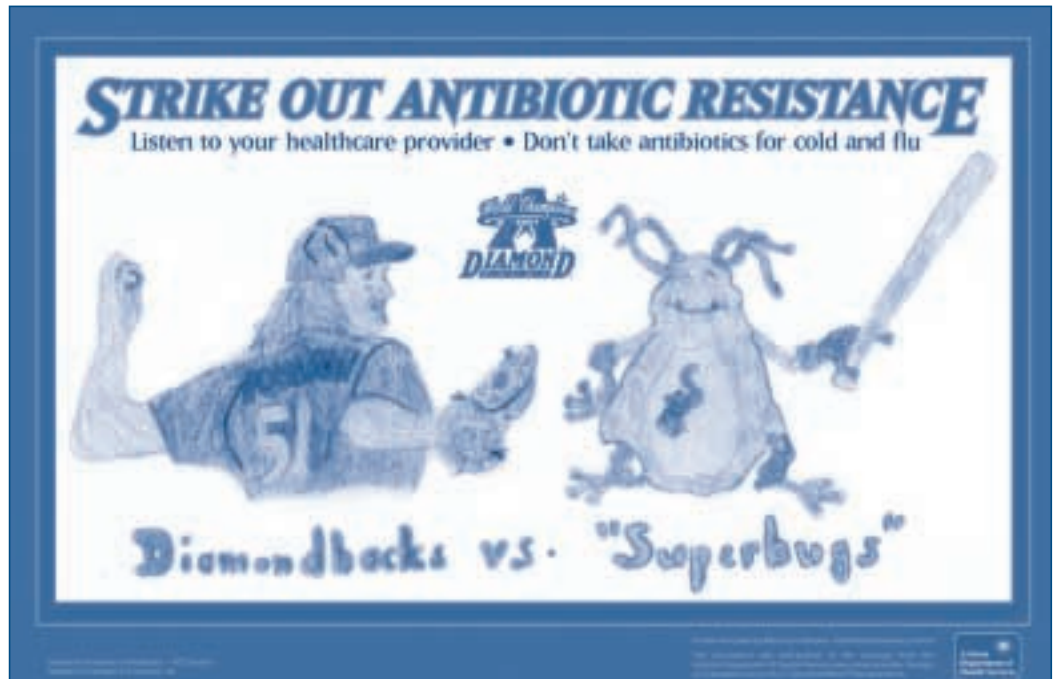
Strike Out Antibiotic Resistance

Although some diseases have been conquered through major advances in science, public health, and technology, new infectious diseases continue to emerge, while others re-emerge in drug-resistant forms. The Centers for Disease Control and Prevention have stated that the emergence of drug resistance in bacteria, parasites, viruses and fungi is swiftly reversing advances of the previous 50 years (www.cdc.gov/ncidod/emergplan/3executive.htm).

Prevention and control of drug-resistant infections hinges upon the judicious use of antimicrobial drugs.

In the first pitch of a public health educational campaign, Governor Hull proclaimed September as "Antibiotic Resistance Awareness Month". The hit of the campaign was an antibiotic resistance poster contest for Arizona school children that was sponsored in part by the Arizona Diamondbacks and the Pediatric Foundation of Arizona, Inc.

Mary-Lynn Piper, a 6th-grader from Litchfield Elementary School, made the winning pitch with her "Strike Out Antibiotic Resistance" poster. For a free copy of this campaign winning poster, contact Clare Kioski at 602.230.5927 or ckioski@hs.state.az.us.



Recommendations for appropriate antibiotic use for health care providers:

- Only prescribe antibiotic therapy when likely to be beneficial to the patient.
- Use an agent targeting the likely pathogens.
- Use the antibiotic for the appropriate dose and duration.
- Educate patients on the appropriate use of antibiotics and the importance of preventative measures, such as handwashing.

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However, the long-term public health impact from the fire may be more insidious. Increases in substance abuse, domestic violence, and other mental health problems are often the consequences of stress that follows disasters such as the Rodeo-Chediski fire. Unfortunately, persons in the most need of counseling and other mental and behavioral health services are often the least likely to seek them out.

The Arizona Department of Health Services has received a grant from the Federal Emergency Management Agency to develop behavioral health programs and counseling services in the affected

communities. A 24-hour hotline, 1.800.640.2123, is now being provided through the Department's Northern Arizona mental health contractor, the Northern Arizona Regional Behavioral Health Authority. Any of your patients who were impacted by the fire that you suspect may benefit from professional counseling or other behavioral health services should be encouraged to call the toll-free counseling hotline.



Photo courtesy of the East Valley Tribune

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SUMMARY OF SELECTED REPORTABLE DISEASES

(January - July, 2002)¹

	Jan - July 2002	Jan - July 2001	5 Year Median Jan - July
VACCINE PREVENTABLE DISEASES:			
<i>Haemophilus influenzae</i> , serotype b invasive disease (<5 years of age)	3 (1)	5 (1)	5 (3)
Measles	0	0	0
Mumps	1	2	3
Pertussis (<12 years of age)	40 (27)	302 (120)	37 (25)
Rubella (Congenital Rubella Syndrome)	0 (0)	0 (0)	1 (0)
FOODBORNE DISEASES:			
Campylobacteriosis	387	342	293
<i>E.coli</i> O157:H7	16	17	18
Listeriosis	9	6	7
Salmonellosis	327	348	357
Shigellosis	180	229	234
VIRAL HEPATITIDES:			
Hepatitis A	202	254	463
Hepatitis B	141	98	113
Hepatitis B: non-acute ²	632	1013	*
Hepatitis C	3	9	12
Hepatitis C: non-acute ³	2521	2151	*
INVASIVE DISEASES:			
<i>Streptococcus pneumoniae</i>	567	581	468
<i>Streptococcus</i> Group A	207	112	118
<i>Streptococcus</i> Group B in infants <30 days of age	15	37	18
Meningococcal Infection	20	13	33
SEXUALLY TRANSMITTED DISEASES:			
Chlamydia	8612	8604	7342
Gonorrhea	2076	2349	2349
P/S Syphilis (Congenital Syphilis)	112 (8)	87 (17)	103 (15)
DRUG-RESISTANT BACTERIA:			
TB isolates resistant to at least INH (resistant to at least INH & Rifampin)	6 (0)	5 (0)	7 (1)
Vancomycin resistant <i>Enterococci</i> isolates	599	437	485
VECTOR-BORNE & ZOONOTIC DISEASES:			
Hantavirus Pulmonary Syndrome	1	1	2
Plague	0	0	0
Animals with Rabies	89	95	35
ALSO OF INTEREST IN ARIZONA:			
Coccidioidomycosis	1932	907	907
Tuberculosis	109	112	123
HIV	212	297	230
AIDS	238	331	331
Lead Poisoning (<16 years of age)	138 (127)	127 (106)	206 (106)
Pesticide Poisoning ⁴	20	9	8

¹ Data are provisional and reflect case reports during this period except Lead Poisoning which is by date of diagnosis.

² These counts reflect the year reported or tested and not the date infected.

* Case counts for non-acute Hepatitis B and C are not available before 1998.

⁴ Not all reports will be confirmed as meeting the case definition for pesticide poisoning upon further investigation.



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Hantavirus – Continued from page 5

rodents, such as roof rats, have not been shown to pose a threat of hantavirus. It is important to take preventive measures to avoid contracting the disease.



"The best defense against infection with hantavirus is to avoid cleaning or disturbing areas with recent rodent infestation including nests and droppings," said Dr. Mira Leslie, State Public Health Veterinarian. "If you do have to clean up droppings or nests, be sure to thoroughly disinfect the area first. Be especially cautious when entering a structure, such as a summer cabin, that has been closed up. People who have been exposed to rodent droppings and who become ill with HPS-like symptoms should seek medical care."

For more information about HPS, contact the ADHS Vector-Borne & Zoonotic Disease Section at 602.230.5820.

Bioterrorism – Continued from page 1

We've come a long way

Arizona has made great gains in the arena of public health preparedness, but there is still a long way to go. The Department's vision of the State's bioterrorism program includes:

- A thoroughly integrated bioterrorism response system, from the local to the federal levels;
- An electronic, web-based, state-wide disease reporting system, that allows for highly secure and near real-time disease and outbreak surveillance;
- SIREN as the medium for all emergency health communications
- A laboratory system to rapidly analyze selected suspicious biological samples

The Centers for Disease Control and Prevention has provided funding to all states, including Arizona, to further public health preparedness and to build a solid public health infrastructure.

- A state-wide bioterrorism and epidemic training program that coordinates all bioterrorism related training for physicians and other health care providers

These new bioterrorism initiatives, although borne of unspeakable maliciousness, are nonetheless an exciting and vitalizing venture for public health, a public service whose role has long been

misunderstood or ignored. The Department looks forward to working with health care providers across the state as we endeavor to achieve public health preparedness.

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